

CBRS Presentation

NOKIA

- Chris Stark

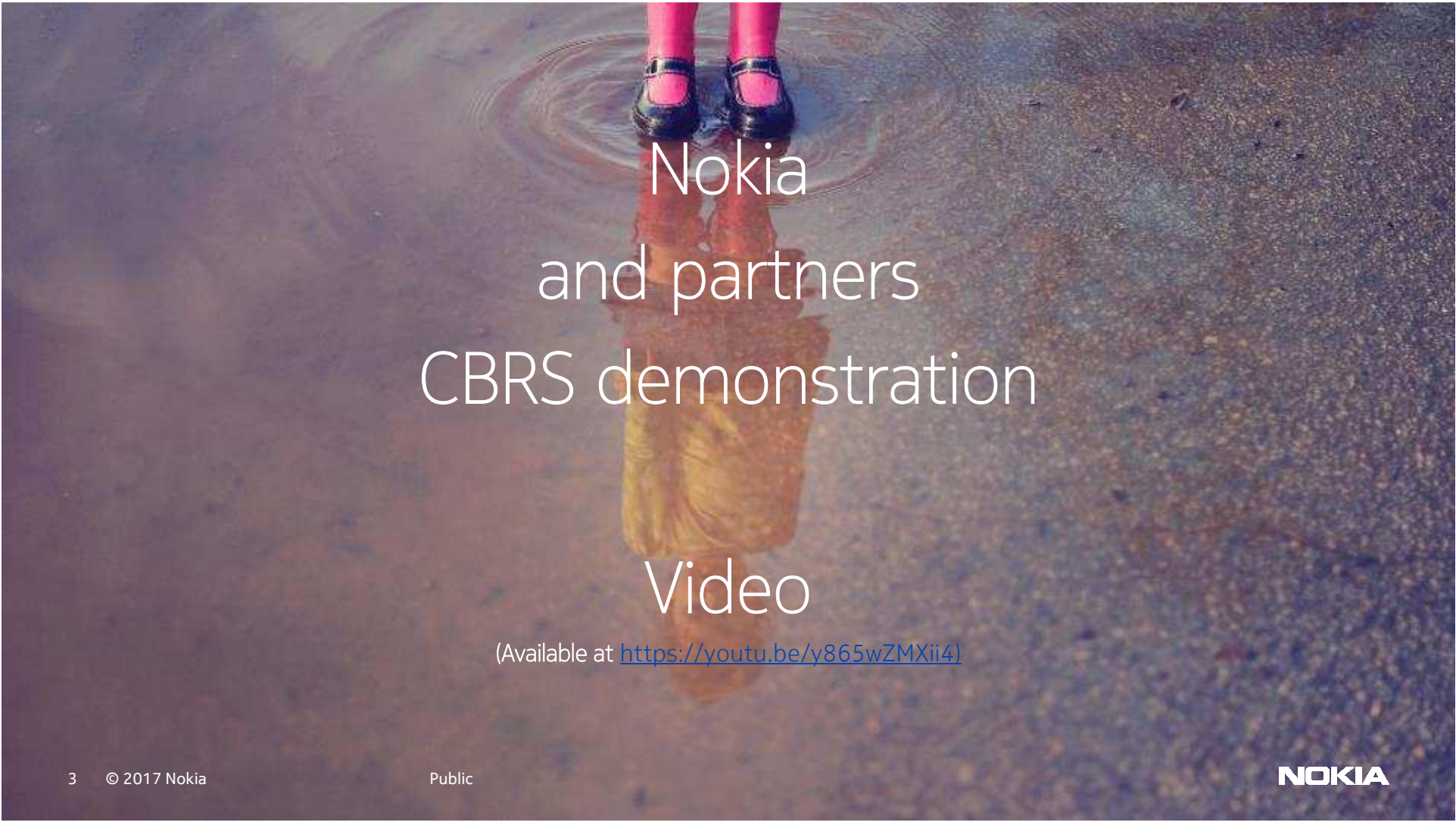
Public

Why CBRN?

Spectrum sharing will encourage innovation driven by what users demand and the market can deliver. “We see a lot more advantages in the sharing of spectrum than purely the efficiency of the spectrum. This is because we can see more innovative uses being enabled by shared access.” Flexibility is crucial in this approach: “from an authorization perspective [we want to] allow users to have the spectrum they need, for what they need, in the place they need it.”

“What we need to do is to enable permissive things to happen, as opposed to trying to predict what should happen. One of the things that is quite key is that we shouldn’t go for a world where innovation is by permission. For us, innovation is something that we should try to facilitate. We’d like to make sure that people have the option to use it, as opposed to us saying that this is what you should do with it.”

Monica Paolini, *A conversation with Philip Marnick, Group Director, Spectrum, Ofcom, and Cristina Data, Director, Spectrum Insight and Analysis, Ofcom, RCR WIRELESS NEWS, May 2, 2017*



Nokia and partners CBRS demonstration Video

(Available at <https://youtu.be/y865wZMXii4>)

Why CBRS (Citizens Broadband Radio Service)?

Ever growing:

- Data demand
- Users
- Devices
- Appliances
- Objects
- Sensors

Service Providers

- Need more capacity at low TCO from a given spectrum

Enterprises

- Require Private LTE to meet special demands

FCC (Regulator)

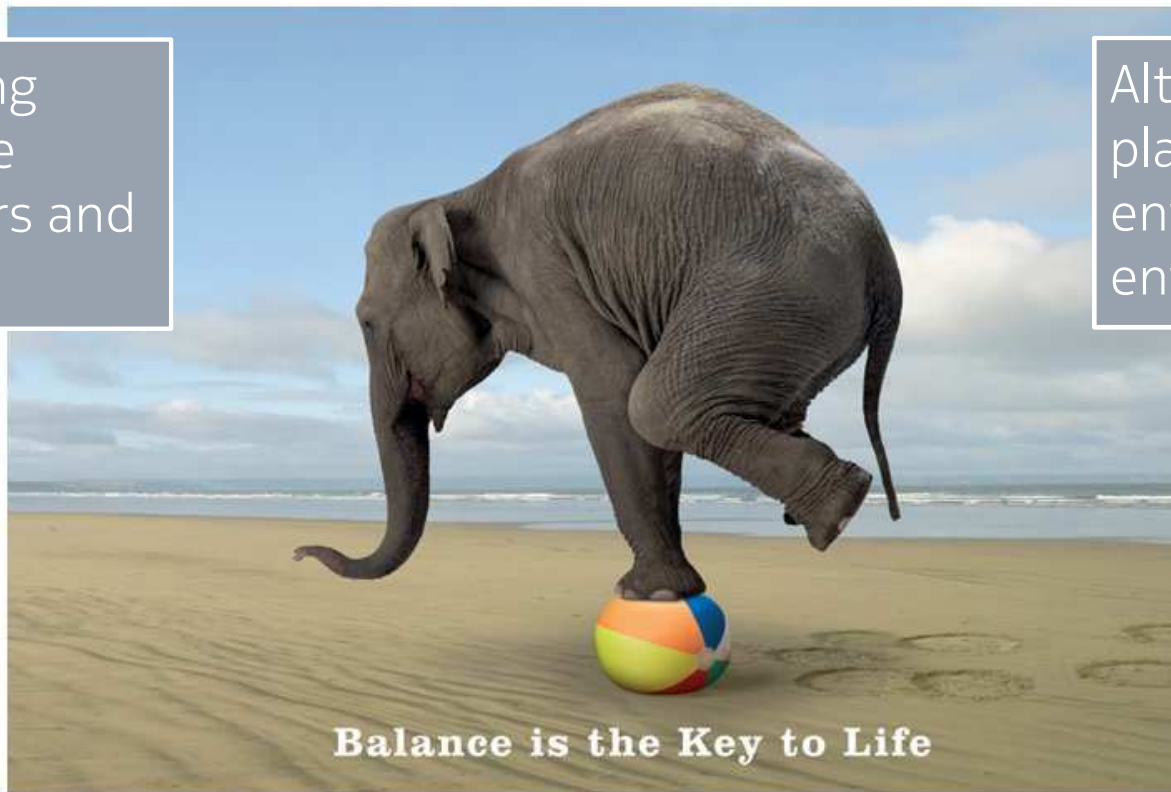
- Wants the efficient use of scarce spectrum

Shared spectrum is required for all of the above – resulting in CBRS

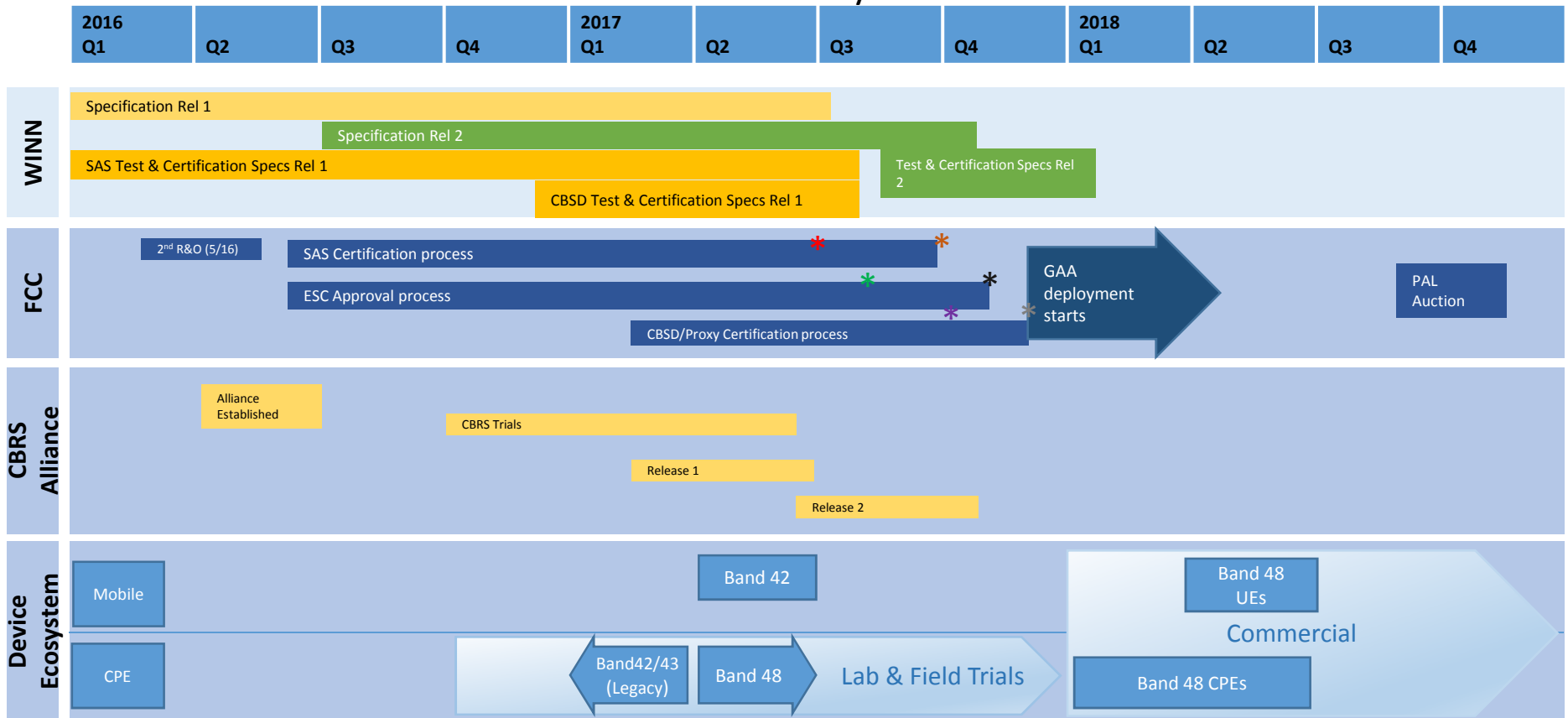
A balancing act to success – this has to be an inclusive band

Existing
mobile
carriers and
WISPS

Alternative
players, new
entrants,
enterprise



Current Industry View



* Start SAS product Certification

* Start ESC product Approval

* Start CBSD product Certification

* First SAS products Certified

* First ESC products Approved

* First CBSD products Certified

Use cases examples

Private or Dedicated LTE

- Full customization of LTE
- Low TCO, Easy deployment
- High capacity
- Enhanced Mobility compared to Wi-Fi
- Security, Surveillance

Other benefits

- 3GPP band 48 recognition
- Channel to new business opportunities
- Creation of Private or Public LTE networks for industrial or enterprise use

Improved Internet of Things

- Industrial
 - Business Critical
- Home
 - Capacity, Coverage
- Outdoor
 - Smart City, Mobility, Safety



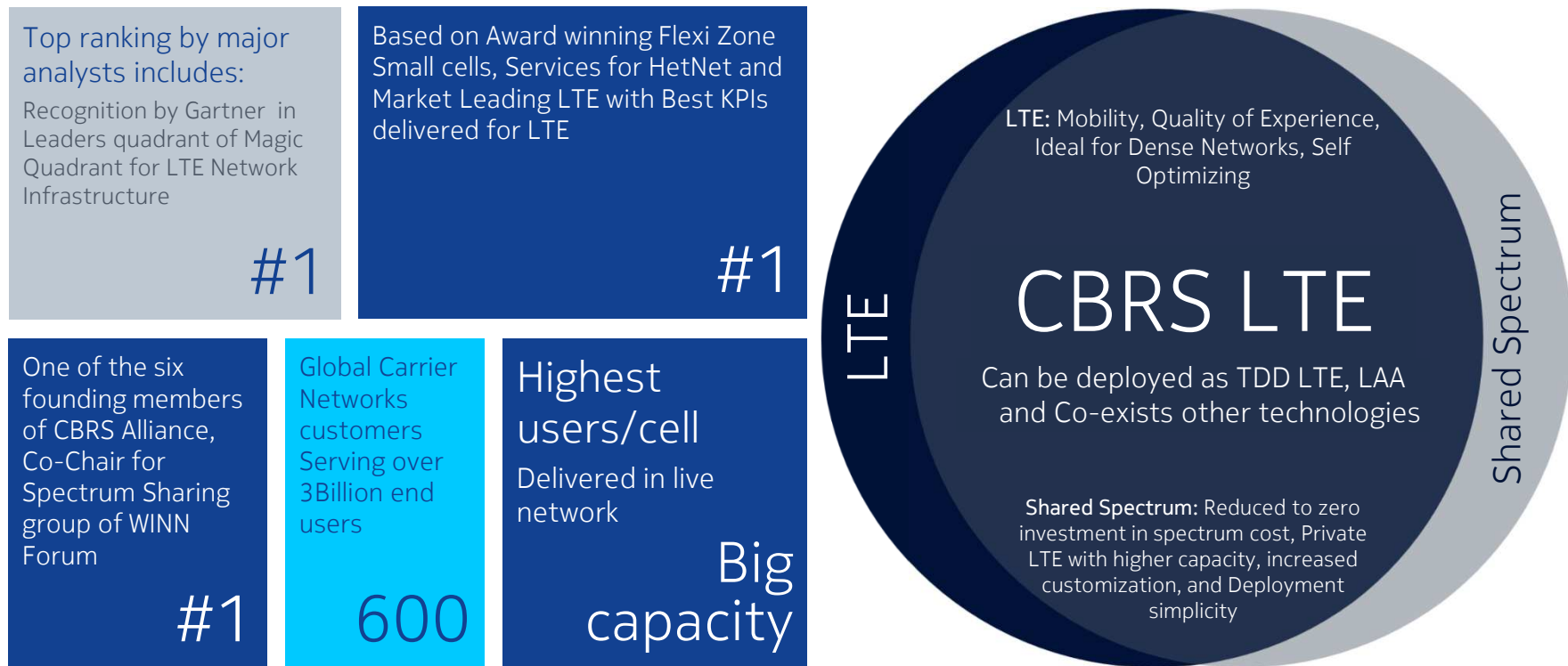
Enabling new business models in all verticals

- Neutral Host, HetNet, Offloading in HotSpots
- Indoor or outdoor coverage



Nokia

Trust Nokia: An innovation force and thought leader in Mobile Broadband



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